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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,569	11/24/2003	Tetsuya Watanabe	36595	9141

26694 7590 10/28/2004

VENABLE, BAETJER, HOWARD AND CIVILETTI, LLP  
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WASHINGTON, DC 20043-9998

EXAMINER
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PATEL, VISHAL A

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/718,569

Applicant(s)

WATANABE ET AL.

Examiner

Vishal Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-30 and 32-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-30 and 37-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/981,807.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/24/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicants' arguments are moot since all the claims in the application are examined, since the claims read on elected specie that includes figure 7. This election is made final.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 22-30, 34-36 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidrich (US. 3811658) in view of Hatch et al (US. 4,943,068).

Heidrich discloses a shaft sealing apparatus, comprising a vacuum casing (casing formed by member 24) formed with a vacuum chamber (chamber having vacuum that is indicated by gauge 20) and having a base portion (end portion of the vacuum casing) formed with an opening to have (opening having a shaft 6 going through) the vacuum chamber held in communication with the atmosphere therethrough. A driving shaft (6) having an outer cylindrical surface and movably extending in the vacuum chamber of the vacuum casing through the opening of the vacuum casing. A sealing unit including a plurality of sealing rings (rings 8) each in the form of an annular ring shape (the rings 8 are annular ring shape) and an annular retaining member (14) fixedly connected the base portion of the vacuum casing and securely retaining the peripheral portion of the sealing rings. The sealing rings contact an outer cylindrical surface of the shaft. The plurality of sealing rings are retained to be held in axially spaced-apart relationship with

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each other in the annular retaining ring (the rings 8 are spaced apart by a flange of 14). The seal unit seals hermetically a gap (gap between 6 and 7) between the shaft and the vacuum casing.

Heidrich further discloses a shaft (5) having a shaft sleeve (6), which surrounds the shaft. A first seal unit having a retaining member (end portion of 6) having an annular ring shape (end portion of 6 which retains seal 9) and retaining a first seal (9) between a shaft (5) and shaft sleeve (6). A second seal unit having a retaining member (14) having an annular ring shape and retaining a second seal (8) between the vacuum casing (7) and the shaft sleeve (6). The shaft sleeve rotates relative to a shaft housing (7). The shaft and the shaft sleeve both rotate around their own axis.

Heidrich fails to disclose that each of sealing rings having a sealing lip, an annular spring member, and a peripheral portion radially outwardly extending from the sealing lip. A labyrinth seal unit intervening between the annular retaining member and the driving shaft to be exposed to the vacuum chamber of the vacuum casing. The labyrinth seal unit including an outer ring member provided on the annular retaining member and an inner ring member provided on the driving shaft. The outer and inner ring members of the labyrinth seal unit collectively forming an interstice therebetween. Hatch discloses a seal having a lip seal (41), an annular spring member (spring member above the lip seal) and a peripheral portion radially outwardly extending from the sealing lip (portion of lip seal in contact with 19, seal of figure 9). The seal having a labyrinth seal (clearance between 19 and 25 that forms labyrinth seal) formed by an outer ring (19) and an inner ring (25). The outer ring being mounted on a housing and the inner ring mounted on a rotating member (7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the first and second seals of Heidrich to

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have a lip seal and a labyrinth seal as taught by Hatch, to enhances the life of the seal and the shaft (column 5, lines 63-64 of Hatch).

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidrich and Hatch as applied to claim 22 above, and further in view of DeHart et al (US. 4,573,690).

Heidrich and Hatch discloses the invention substantially as claimed above but fails to disclose the outer cylindrical surface of the drive shaft is smaller in surface roughness Ra than 0.1 micrometer. DeHart discloses a shaft surface (pads 30 on shaft form a surface of the shaft that has a unique roughness) that is in contact with a sealing lip and the shaft surface is smaller in roughness than Ra of 0.1 micrometer (column 4, line 63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the outer cylindrical surface to have a surface roughness that is smaller in surface roughness Ra than 0.1 micrometer as taught by DeHart, to provide an improved sealing surface (see abstract of DeHart) and to reduce seal friction (column 2, lines 5-8 of DeHart).

#### ***Allowable Subject Matter***

4. Claims 32-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Toth et al, Fujii et al, Bleck et al and Michel et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is (703) 308-8495. The examiner can normally be reached on Monday through Friday from 7:30 PM to 4:00 PM (EST).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann, can be reached on (703) 306-4115.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168. Technology Center 3600 Customer Service is available at 703-308-1113. General Customer Service numbers are at 800-786-9199 or 703-308-9000. Fax Customer Service is available at 703-872-9325.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:** 703-872-9326, for formal communications for entry before Final action: or,  
703-872-9327, for formal communications for entry after Final action.

Hand-delivered responses should be brought to Crystal Park Five, 2451 Crystal Drive, Arlington, Virginia, Seventh Floor (Receptionist suite adjacent to the elevator lobby).

VP  
October 25, 2004

A handwritten signature in black ink, appearing to read "Vishal Patel", with a stylized flourish at the end.

Vishal Patel  
Patent Examiner  
Tech. Center 3600